# Update 2 on Plug Door Simulations

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fsPHENIX Meeting

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Quick Update/Info

- Purpose is to change plug door dimensions to see how it affects the energy lost by the particles going through it

- Same particles as last time charged pions with 30 GeV

- Goal is to see how thin we can make it without losing the physics

- Ran simulations so now I have 10000 events instead of 100

- Did similar plots as last time but this time enabled check overlap
  - Plots included default length of 10.2 cm, 5.1 cm, 2.55 cm, 0.1 cm, and 100 cm
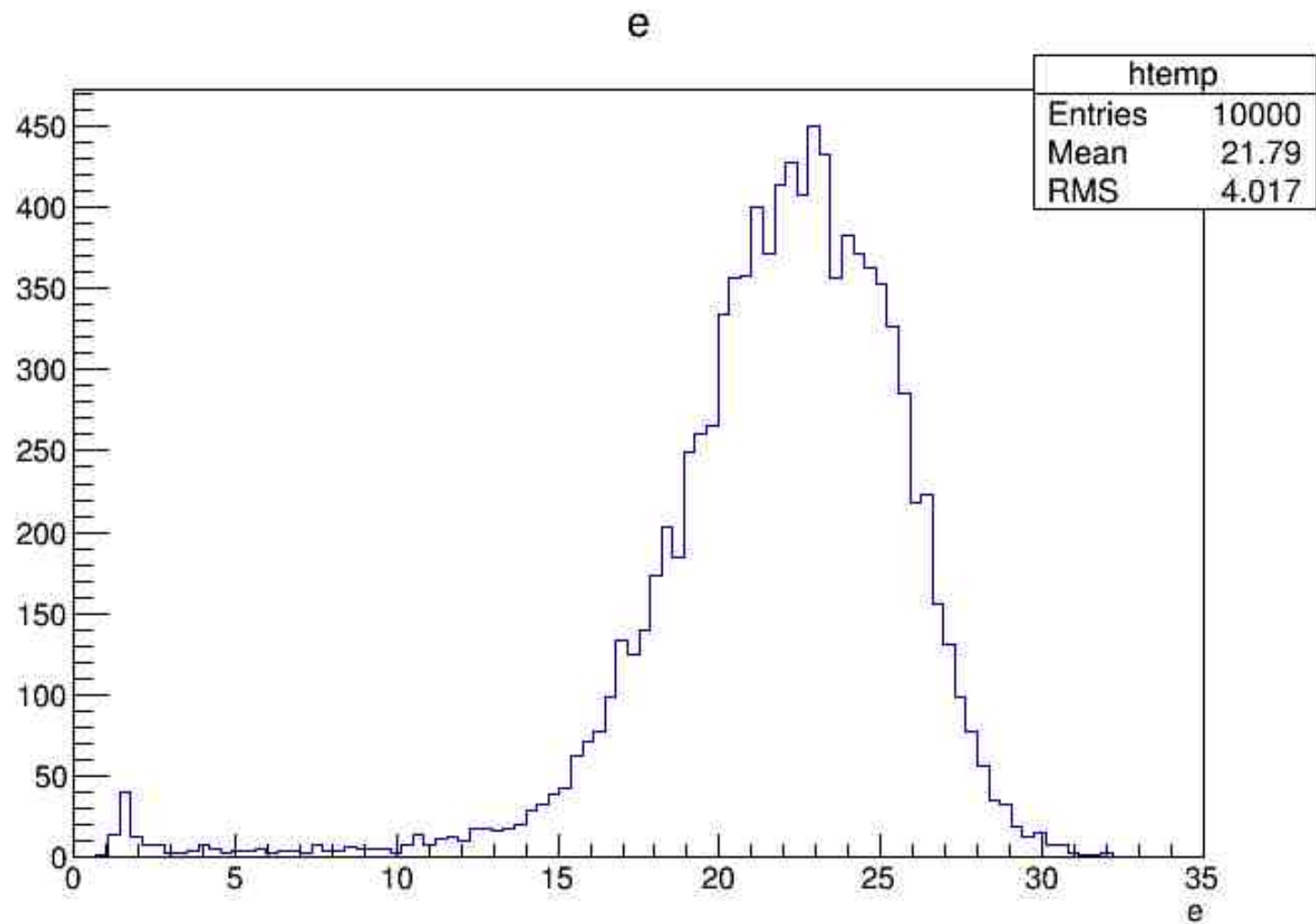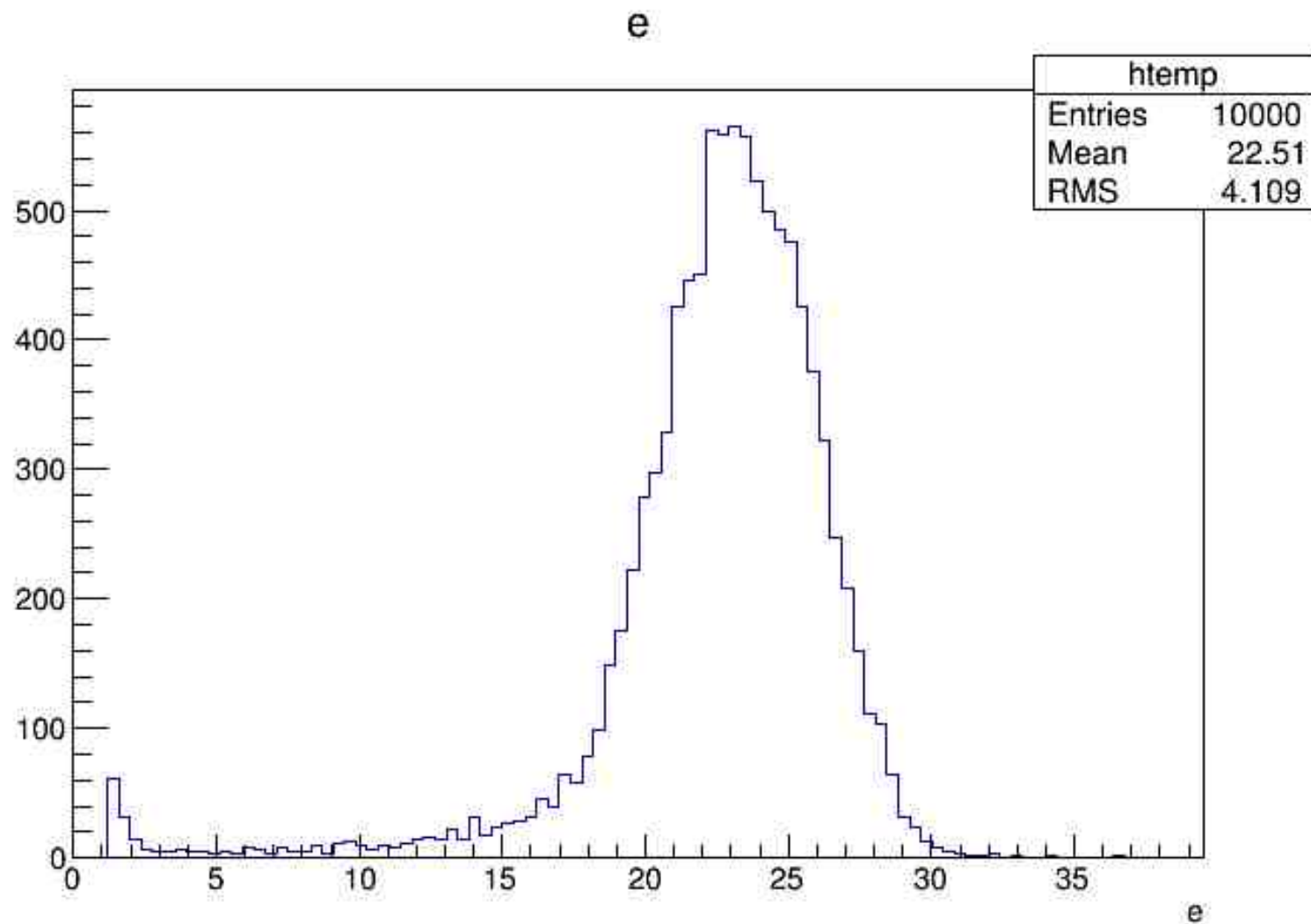 - Surprisingly 100 cm did not give an error with check overlap

100 cm

10.2 cm
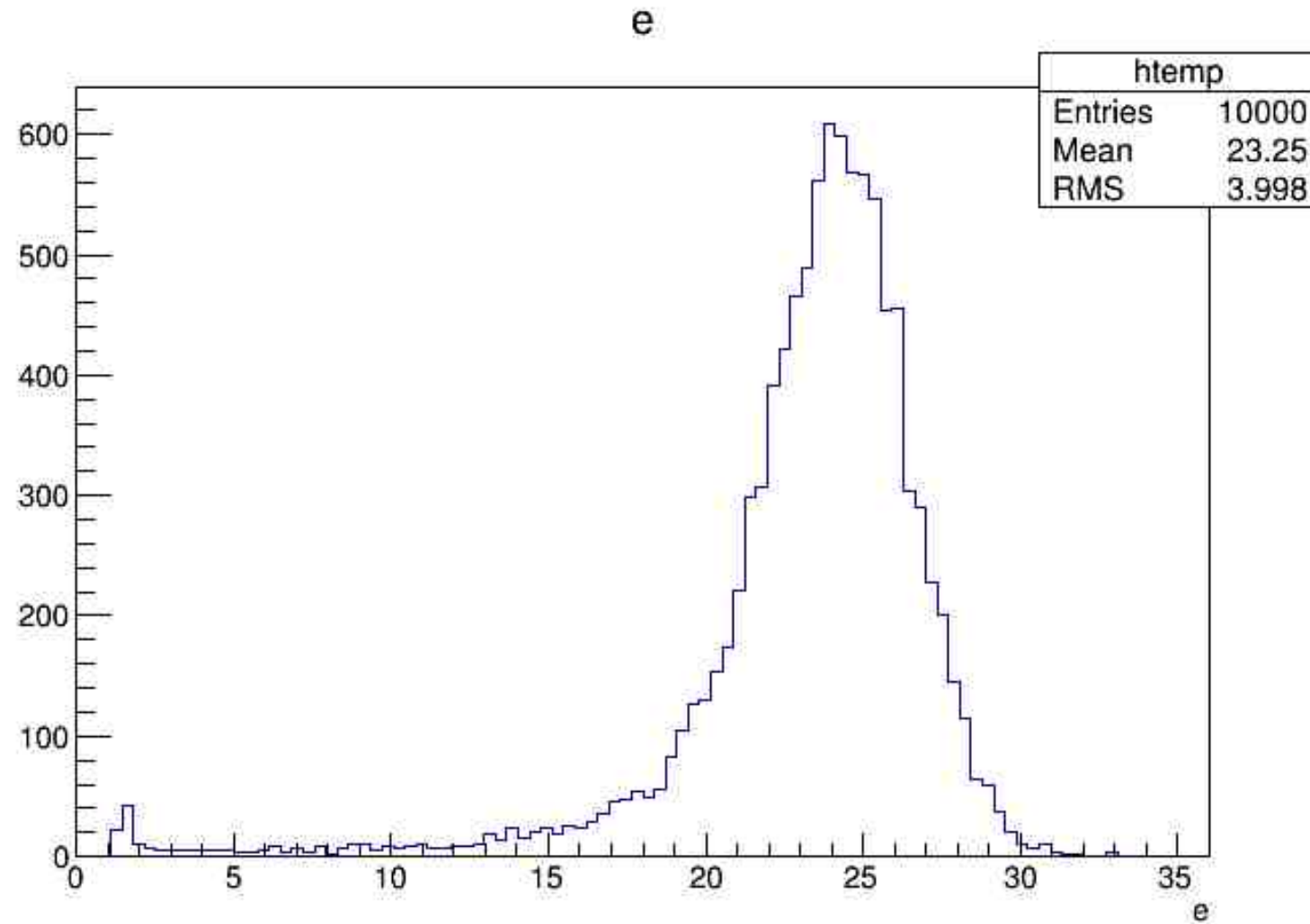## (Default value)

e

htemp	
Entries	10000
Mean	20.19
RMS	4.553
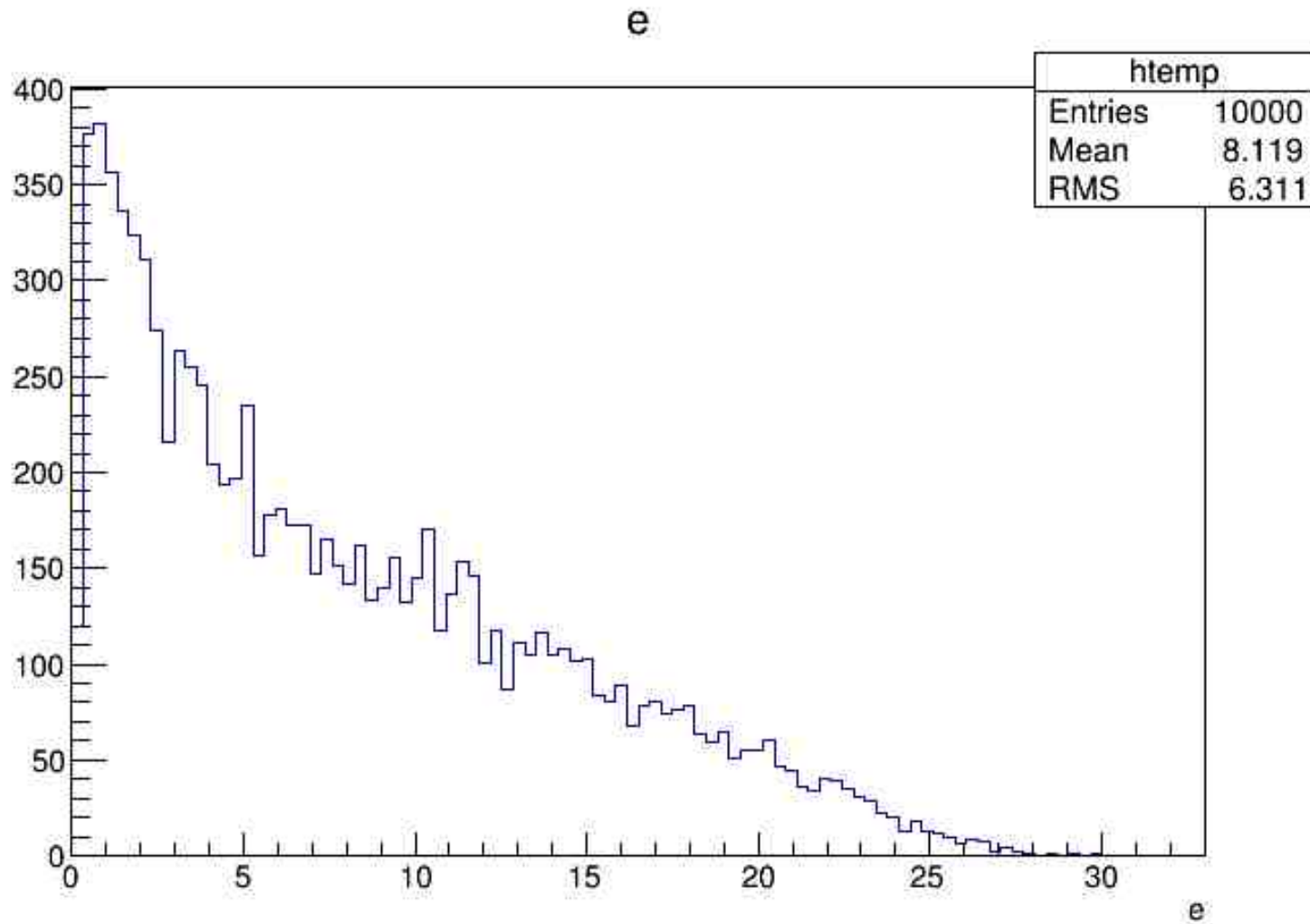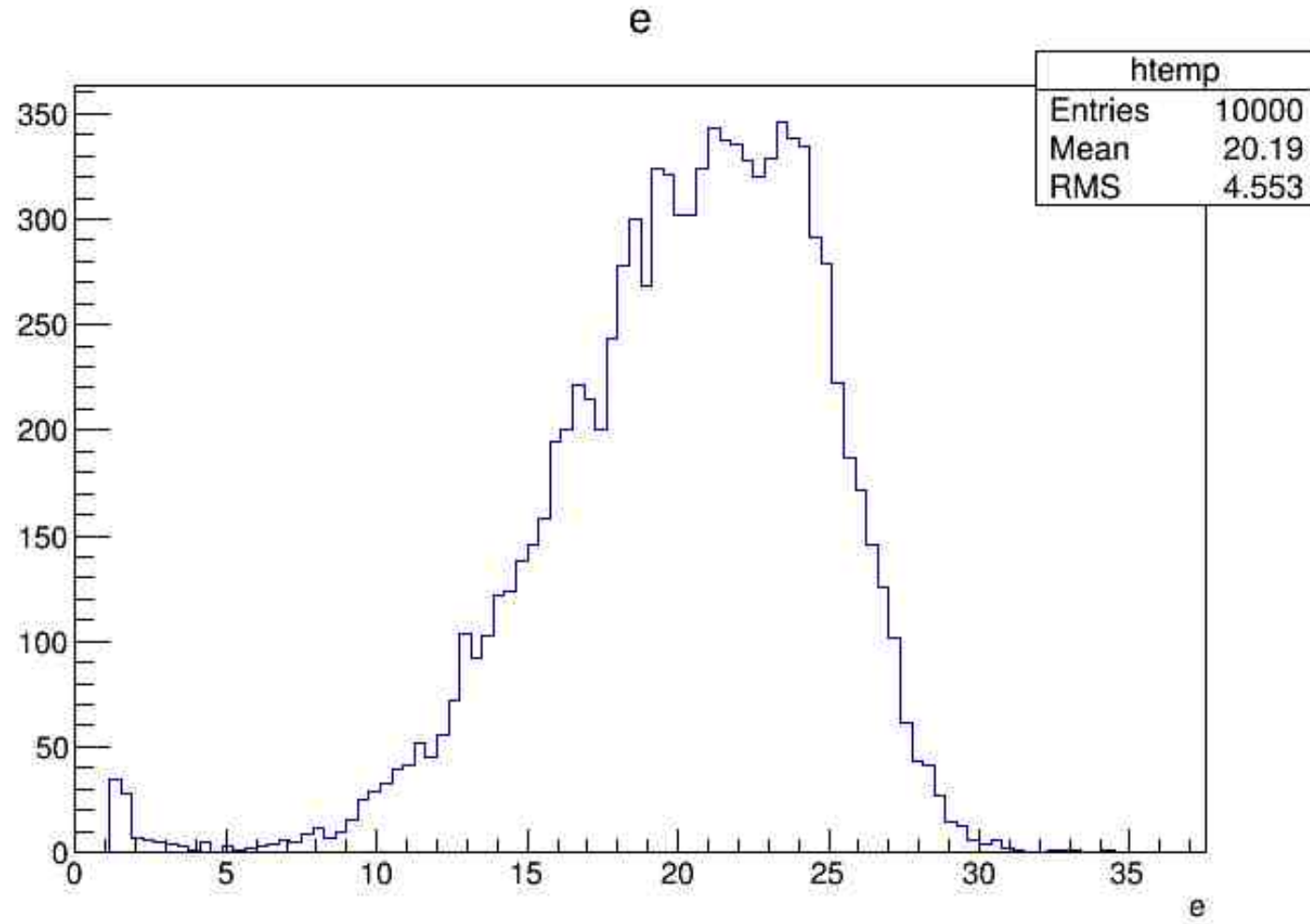
5.2 cm (Half Default)

2.55 cm (Quarter Default)

0.1 cm

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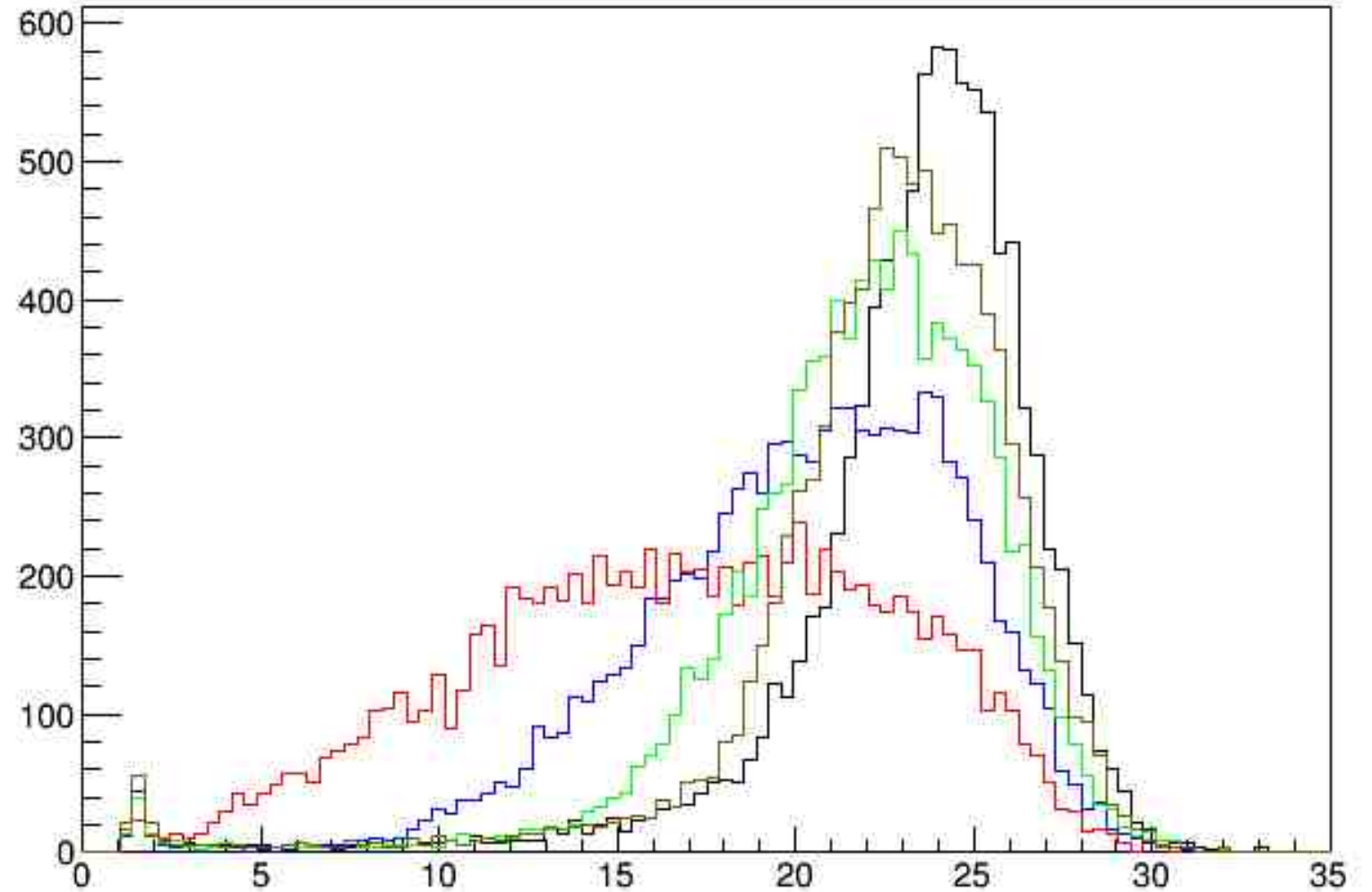| htemp	
Entries	10000
Mean	23.25
RMS	3.998

Overlapped Plots

- Red is 20.4 cm (Double)

- Blue is 10.2 cm (Default)

- Green is 5.1 cm (Half)

- Orange is 2.55 cm (Quarter)

- Black is 0.1 cm (millimeter)

Conclusions and Future Goals

- Energy loss seems to be the same throughout and only the peak width changes
- Not sure what this means (Lifetime perhaps)
- Also don't know what the tail near zero means
- Do a hand calculation
  - Need geometry of detectors in front of and behind plug door
  - Need to know more about hcal that is doing the measurement behind the plug door
- Run simulations with different parameters
  - Not sure what else to look at so suggestions are welcome

Backup

- Running 100 events takes about 30 mins
- Running 100 events with check overlap takes about 1 ½ hours
- Run with check overlap on 10 events takes about an hour so I do this first before submitting to condor to make sure there was no overlap
- 100cm passed overlap check
- Old slides can be found in the April 19, 2016 meeting